

Claims

1. A permanent magnet brushless motor comprising a winding divided into a plurality of sections and switch means for selectively connecting the sections of the winding in one of a plurality of different configurations, wherein each section is connected in series and/or parallel with all other sections of the winding.
2. A permanent magnet brushless motor as claimed in claim 1, in which the switch means is arranged to connect all of the winding sections in parallel.
3. A permanent magnet brushless motor as claimed in claim 1, in which the switch means is arranged to connect all of the winding sections in series.
4. A permanent magnet brushless motor as claimed in claim 1, in which the switch means is arranged to connect some of the winding sections in parallel, with at least one other section being connected in series with the parallel-connected sections.
5. A permanent magnet brushless motor as claimed in any preceding claim, in which the voltage applied to the winding is pulse-width modulated., for example using said switch means.
6. A permanent magnet brushless motor as claimed in claim 5, in which the voltage applied to the winding is pulse-width modulated by selectively energising said switch means.
7. A permanent magnet brushless motor as claimed in any preceding claim, comprising means for repeatedly

5           actuating said switch means to change said winding sections between different connection configurations to obtain a motor characteristic intermediate that of the configurations between which the windings are repeatedly switched.

8.           A permanent magnet brushless motor as claimed in any preceding claim, comprising control means for actuating the switch means to vary the configuration of the winding connections whilst the motor is running, in  
10           accordance with predetermined operating parameters.

9.           A permanent magnet brushless motor as claimed in claim 8, in which the control means is able to vary the configuration of the winding connections whilst the motor is running, in accordance with the output of  
15           means for sensing an operating parameter of the motor.

10.          A permanent magnet brushless motor as claimed in claim 8, in which the control means is able to vary the configuration of the winding connections whilst the motor is running, in accordance with the output of  
20           means for sensing an operating parameter of the article being driven by the motor.

11.          A permanent magnet brushless motor as claimed in claim 8, in which the control means is able to vary the configuration of the winding connections of a  
25           conducting phase whilst the motor is running, in accordance with the back emf measured across the winding of non-conducting phase or a section thereof.

12.          A permanent magnet brushless motor as claimed in claim  
30           8, in which the control means is able to vary the

configuration of the winding connections whilst the motor is running, in accordance with time or an operating cycle or program.

13. A permanent magnet brushless motor as claimed in claim 5 8, in which the control means comprises means for manually changing the configuration of the winding connections.
14. A permanent magnet brushless motor as claimed in any preceding claim, in which all of the sections of the or 10 each winding are wound in parallel to each other.
15. A permanent magnet brushless motor as claimed in any preceding claim, in which the sections are connected such that current flows through each section in the same direction.
- 15 16. A permanent magnet brushless motor as claimed in any preceding claim, in which one of the sections of the winding comprises a different number of turns from another section.
17. A permanent magnet brushless motor as claimed in any 20 preceding claim, in which one of the sections of the winding comprises a conductor having a different cross-sectional area than the conductor of another section.